myelography are necessary to detect lesions within the internal auditory canal.

Central lesions causing vertigo include cerebellar infarction, hemorrhage and tumors—both primary and metastatic. Isolated midline cerebeller lesions may only produce vertiginous symptoms that simulate peripheral ear lesions. These cerebellar lesions may only be detected on computed cranial tomography.

The adult Arnold Chiari malformation of the lower brain stem and upper cervical spine can result in vertigo. This malformation is best seen with posterior fossa myelography.

Sophisticated radiological techniques can detect many causes of vertigo. The selection of the proper technique is determined after a thorough neurological and otological examination.

LEON G. KASEFF, MD

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Evaluation of Seizure Disorders by Computed Tomography

MOST SEIZURE DISORDERS are *idiopathic* without discernible cause, such as tumor, vascular malformation or the like. In seizure disorders, plain radiography of the skull is very insensitive in the detection of intracranial pathologic conditions, and may be omitted in many cases. Electroencephalography is still helpful in the screening and detection of significant intracranial lesions, but nonspecific in etiological classification. Before the advent of computed tomography (CT), the radiographic evaluation of this entity was complicated, expensive and hazardous, often with a disappointing yield of pathologic findings. CT has simplified this evaluation, and has eliminated the need in many cases for other studies, especially pneumonencephalography. Although any epileptic patient may benefit from CT evaluation, the highest yield of intracranial abnormalities is shown in persons with a short duration of seizure activity at the time of examination (less than six months), advanced age (especially over the age of 65), focal neurological findings and focal seizure types secondarily generalized.

In general, 40 percent of CT scans evaluated in epileptic patients show abnormalities. Most changes are either diffuse or focal atrophy (61 percent of abnormalities). Neoplasms (10 percent), arteriovenous malformation (10 percent), infarcts (10 percent) and hydrocephalus (8 percent) are also shown.

ARTHUR B. DUBLIN, MD

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The Resurgence of Endocurietherapy

ENDOCURIE (interstitial or intracavitary implant) therapy employs radioactive isotopes placed close to or into malignant tissue. This approach creates certain physical and biologic advantages compared with external beam therapy. Implants may be temporary or permanent. When the tumor is anatomically accessible, temporary implants are usually (but not always) utilized; the patient remains in the hospital for the duration of the radioactive exposure, and all sources are removed before he is released. When the tumor is less accessible, permanent sources are placed at surgery. Until recently endocurietherapy had found its only major application in gynecologic malignancy, primarily because of the unsuitability of the commonly available radioisotopes (radium 226, cesium 137) for interstitial implants. More useful artificial isotopes have been developed recently, greatly expanding the clinical scope of endocurietherapy.

Iridium 192 is most useful for temporary implants. Unlike radium, which must be enveloped in a thick platinum jacket to contain gaseous radioactive daughter isotopes, iridium remains a solid and can be packaged in very small wires or seeds, providing source flexibility, minimizing tissue trauma and creating the possibility of *afterloading*. Afterloading is a procedure in which receptacles for the radioactive sources (small plastic tubes in the case of iridium) are placed into or near the tumor in the operating room; later in the isolation of a private hospital room, the radioactive sources are placed into these receptacles. Afterloading minimizes unnecessary personnel radioactive exposure.

Iodine 125, another manufactured isotope, has properties more suitable for permanent implants. Its wave energy, while biologically useful, is relatively low (28 kiloelectron volts), which means

that virtually all its radioactivity will be absorbed by the patient and almost no exposure to other people will occur. The sources are very small, thereby limiting normal tissue reaction, but are made radiopaque so that the radioactive dose may be calculated. Its relatively long half-life (60 days) is also advantageous for three reasons: (1) The seeds may be stored for several days before use without a severe loss of activity, facilitating clinical planning and scheduling; (2) radioactive exposure of tumor cells is protracted and at a low dose rate which may be biologically advantageous; (3) the intensity of radioactivity is relatively low, meaning that exposure to operating room personnel at seed insertion is minimal. The many advantages of this isotope have led to its increasing use and have rendered its predecessors (such as radon 222 and gold 198) obsolete.

With these isotopes in hand, intracavitary techniques are being extended to almost all solid tumors. Endocurietherapy will play an increasingly important role in clinical radiation oncology.

STEPHAN L. SEAGREN, MD
THOMAS R. SHARP, MD

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